

**REMARKS**

In response to the outstanding Action, with reference to the Examiner's paragraph numbers:

**[1-3]** Noted; the Examiner's Response to Arguments of ¶ 3 is discussed below.

**[4]** The drawing is amended as requested to add "Prior Art" to Figs. 9 and 10.

**[5 and 6.2]** The Examiner stated that the phrases "first metal strip," "second metal strip," and "third metal strip" in claims 1 and 21 were not supported in the specification and the Examiner objected to both the claims and specification. This is respectfully traversed for the record but the specification is amended to further clarify literal support for these phrases.

**[6.1]** The Examiner objected to claims 1, 22, and 23 for "identical" and suggested replacement with "equal." The replacement has been made without change to the scope of the claims. The extra occurrences of "the" in claim 5 have been removed, and the Examiner is thanked for pointing out this typographical error. As to claim 23, the objection is respectfully traversed for the record because the first "at" is different in meaning from the second "at"; however, to remove any possible confusion, the first "at" is replaced with "to" (which has the same meaning in the context of claim 23), so that the scope of the claim is not affected.

[7-7.1] Claims 1-7, 20, and 23 were rejected under §103 over Takaramoto '860, previously applied, in view of Appel '292, also previously applied, and now further in view of admitted prior art ("APA"), newly applied. This rejection is respectfully traversed.

**Capacitors and Supply Lines.** As the Examiner knows, the capacitance of a parallel-plate capacitor (such as capacitor 22/24 of Takaramoto's Fig. 1A) is inversely proportional to the separation between the plates, and the capacitance of two capacitors in series is one-half that of either. Thus, interposing a third metal plate between the original two plates of a parallel-plate capacitor does not change the capacitance, and doing so would be pointless. (The prior art does not disclose or suggest introducing a third plate; this point is introduced here by the Applicant for discussion only.)

However, the same is not true of a transmission line (such as the Applicant's claimed power supply line). In general, the impedance of a transmission line is a more complicated quantity in which the capacitance is only one factor, and inductance another. For example, a coaxial cable has an impedance<sup>1</sup>  $Z=k_1 \log (d_{ID \text{ outer}}/d_{OD \text{ inner}})$  and a capacitance<sup>2</sup> of  $C=k_2/\ln (d_{ID \text{ outer}}/d_{OD \text{ inner}})$  (where  $k_1$  and  $k_2$  are constants), so that the impedance goes up while the capacitance goes down, with the same ratio of diameters.

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<sup>1</sup> Shrader, *Electronic Communication*, 3<sup>rd</sup> Ed., McGraw-Hill, New York, pp. 505.

<sup>2</sup> Haliday and Resnick, *Fundamentals of Physics*, Wiley, New York, p. 494.

**The Applicant Claims a Line.** The Applicant's independent claims 1 and 21 recite "power supply lines" and dependent claims 23 and 24 recite a voltage source "connected to at least one *end* of the multilayered power supply line, whereby electricity is conductable *lengthwise through* the multilayered power supply line."

The APA discloses a power supply line that carries electricity along its length and has an impedance (page 1, line 22-24). However, Takaramoto and Appel both disclose capacitors and do not mention inductance, impedance, or transmission of signals through their capacitors.

The Examiner does not apply the capacitor plates (22, 24) of Takaramoto, but instead applies elements (28, 14, 26a) surrounding the capacitor plates. Nevertheless, the reference teaches a capacitor.

**Combination.** The APA discloses that the two strips 92 and 94 are electrically connected (Fig. 10), which is suitable for a transmission line<sup>3</sup> but not a capacitor; shorting the two plates of a capacitor destroys its function. Similarly, separating the two strips 92 and 94 could destroy its function as a transmission line by changing the electrical characteristics.

APA on the one hand, and the other two references on the other, inherently teach against combination with each other because of this fact, that combination would destroy their functions.

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<sup>3</sup> The independent claims also recite that "the second metal strip is electrically connected to the first metal strip and thereby supplied with power equal in potential to the first metal strip."

The Examiner asserts (page 5, third paragraph from bottom) that the person of ordinary skill would have combined APA with Takaramoto “motivated by its known suitability for its intended use. See MPEP §2144.07.” However, the Examiner does not support these statements either by citation to the references or by argument. The only “intended” use disclosed by APA itself is in a “power supply line” (APA at page 1, lines 16-22) and, as noted above, Takaramoto discloses only a capacitor and does not suggest any power supply line, so the “intended” use is not the use of Takaramoto itself. Furthermore, APA teaches *against* the use of the APA (page 3, lines 3-8) and therefore the person of ordinary skill would never have applied it to a different device, without some other reason.

Thus, the combination of APA and Takaramoto is not suggested and indeed is taught against.

**The Invention Would Not Be Reached.** The Examiner depends on Takaramoto’s element 26a for anticipating the claimed third strip, but it is really a “via layer” (col. 7, line 15) made up of vias. Furthermore, it is not sandwiched between the first and second layers. No combination, even if made (not admitted), could reach the invention.

**Identical or Equal Width.** The Examiner applies APA for disclosing equal widths of first and second metal strips. This is respectfully traversed.

(1) The APA does not explicitly state or illustrate the asserted equal width, and the Examiner must have inferred this feature. Fig. 10 does not show any widths at all and Fig. 9 shows only the width of the uppermost layer 92, not the

width of layer 94 which is concealed beneath. This figure only proves that 94 is *not wider* than 92; anything else is a guess.

(2) The layers 92 and 94 are adjacent (Fig. 10) and therefore if APA were to teach equal widths (not admitted) then it would teach equal widths of *adjacent* layers, which is not what is claimed; rather, the converse proposition is exemplified in claim 1, which claims that the first and second strips—which are separated by the third strip—are equal. The equal-width strips are *not* adjacent.

(3) The Examiner asserts (page 5, line 19) that APA teaches what was known at the time of invention, but there is no support for this statement. The APA can only be related to the filing date, not the invention date, unless additional evidence is presented.

**Appel.** Appel is applied for mutually parallel strips, and the Examiner asserts that making Takaramoto's elements parallel would have been "motivated by its known suitability for its intended use" (page 6, line 4), but the Applicant believes that this does not amount to an actual motivation, because it lacks any specific statement about advantages and motivation.

The Examiner asserts (page 3, line 5), without citation, that "there is no requirement that a motivation to make the modification be expressly articulated." It is unclear if the Examiner is referring to articulation in the prior art or in the rejection itself: if the latter, this is contrary to MPEP §2142 ("The initial burden is on the examiner to provide some suggestion ... When the motivation is not immediately apparent, it is the duty of the examiner to explain why the

combination ... is proper"); if the former, then it is not clear to the Applicant just what the asserted motivation is, because there is no explanation of how motivation is articulated, either expressly or inexpressly.

The Examiner states that Takaramoto and Appel disclose the "same subject matter, namely decreasing parasitic capacitance" and this is one possible motivation that is not expressly articulated by the references. However, only one (Appel) is concerned with decreasing parasitic capacitance, and the other is not. Appel is concerned with increasing *intentional* capacitance (Abstract line 4 and ¶¶ 5, 7-8, 21, etc.) and is not concerned in the slightest with *parasitic* capacitance. Meanwhile, Takaramoto is concerned *only* with parasitic capacitance, not intentional capacitance (e.g., col. 1, line 17 to col. 2, line 45); and Takaramoto teaches decreasing this capacitance, not increasing it. The two references have mutually distinct areas of concern and they teach exactly opposite as to increase and decrease, within their respective areas of concern.

**Official Notice.** In addition to applying Appel, the Examiner appears to take official notice of the same feature (at page 6, lines 9-10). This Applicant traverses official notice, if it is taken; if not, the Examiner's statement carries no weight.

**Claims 2-3 and 5.** In rejecting claim 2, the Examiner ignores the non-grounded capacitor plate 22, but then, in rejecting claim 3, states that it would be inherently obvious to connect one of the grounded portions to something else. In rejecting claim 5 the Examiner makes the same argument but identifies 30 as a

power supply. The reference already has a non-grounded portion (plate 22) that is connected to 30, and it would be useless to disconnect already-connected portions 28, 14, 26a from one another and reconnect them to provide what is already there.

**Dependent Claim 23.** The Applicant notes that, even if the combination were made (not admitted), claim 23 would not be reached because Appel discloses inserting opposite-polarity electrodes between any three electrodes held at the same potential, and removing these opposite electrodes would destroy the function of Appel. This argument also applies to new claim 24.

**[7.2]** Claims 21 and 22 were rejected under §103 over APA in view of Takaramoto and Appel. This rejection is respectfully traversed.

The Applicant's arguments against combination that were made above apply equally to this rejection, and are repeated by reference.

Claim 21 employs "consists of" where claim 1 employs "comprises" and therefore the Examiner must demonstrate that a power supply line without any other features than those recited is obvious from the references. If Takaramoto were combined with APA as the Examiner asserts with the addition to APA of the vias 26a (not admitted), there is no reason why the person of ordinary skill would have added the vias 26a but nothing else, because a via has no function but to connect two other parts; the other two parts would have also been added to APA by the person of ordinary skill, and therefore the subject matter of the claim would not have resulted.

**[7.3]** Claims 16-19 were rejected under §103 over Takaramoto in view of APA and Appel and further in view of Hajimiri US Pub 2003/0206389. This rejection is respectfully traversed.

The Examiner asserts that Hajimiri teaches in Figs. 2-9 various shapes and sizes of strips for capacitor structures. The Applicant points out that structure 200 in applied Fig. 2, described in ¶8, is equivalent to what is disclosed by Appel, and Hajimiri teaches against it by saying (¶10) that “there is a need for ... new capacitor structures.” Thus, Hajimiri teaches against combination with Appel.

**New Claim 25.** New independent claim 25 is supported in the drawing (e.g., Fig. 2) and at page 10, lines 12-14, describing the through holes 18 and 20 which conduct electricity. The features recited in new claim 25 are not disclosed in the prior art. Of the applied art, only Takaramoto discloses vias, and the Examiner has asserted that these vias anticipate a strip, so they cannot also be applied to anticipate vias; and in any event the Takaramoto vias are not of the recited lengths and locations.

The Applicant notes that in Takaramoto's Fig. 1A, there is no direct electrical connection between the lower interconnection layer 14 and the upper structures, such as the via layer 26b.

Allowance is requested.

Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should any fee be required, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,



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